PATENT
03959-P0024A WWW/HJP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	Ralf Aumueller, *et al.*
Application No. 10/816,448	Filing Date: 2004/04/01
Title of Application:	Compressed Air Processing System
Confirmation No. 9254	Art Unit: 3683
Examiner	Douglas C. Butler

Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Petition to Revive Patent Application for Unintentional Delay Under (37 CFR 1.137(b))

Dear Sir:

The above-identified application became abandoned for failure to file a timely and proper response to the Office Action mailed on July 15, 2004, which set a three month period for response. No extension of time was obtained. The abandonment date of this application was October 16, 2005 (i.e., the day after the expiration date of the period set for response plus any extensions of time obtained therefore). Applicants first discovered that the application had gone abandoned on February 24, 2005 upon receipt of a Notice of Abandonment mailed February 18, 2005.

Mailing Certificate: I hereby certify that this correspondence is today being deposited with the U.S. Postal Service as *First Class Mail* in an envelope addressed to: Mail Stop Petition; Commissioner for Patents; P.O. Box 1450; Alexandria, VA 22313-1450.

May 18, 2005 Tamara L. Millikan

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Applicant Hereby Petitions for Revival of This Application

1. **Petition Fee.** Enclosed is a credit card authorization for the petition fee of $1,500.00. If there is any fee deficiency, please charge Account No. 19-4516.

2. **Proposed Response.** The proposed Response to the above noted Office Action is enclosed herewith.

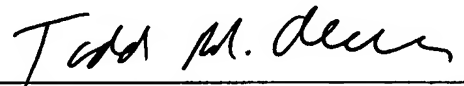
3. **Verified Statement.** Because this petition pursuant to 37 CFR 1.137(b) was filed (A) within 3 months of the date the applicant first learned that the application had gone abandoned, and (B) within 1 year of the date of abandonment of the application, detailed information as to the cause of the delay is not being provided pursuant to MPEP 711.03(c)(III)(D). Should the Commissioner require such detailed information, such will be provided.

(a)The entire delay in filing the required reply from the due date for the reply until the filing of a grantable petition under 37 CFR 1.137(b) was unintentional.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that

willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,



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Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO OFFICIAL ACTION

Dear Sir:

This is a response to the outstanding Office Action mailed July 15, 2004. Please enter this Response to Official Action in the above-referenced application. This Response is being filed in connection with a Petition to Revive Patent Application For Unintentional Delay Under (37 CFR 1.137(b)) and the appropriate fee. Applicant believes that no further fee is due in connection with the filing of this Response. However, if any fee is due please charge Deposit Account No. 19-4516.

Certificate of Mailing: I hereby certify that this correspondence is today being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Mail Stop Petition; Commissioner for Patents; P.O. Box 1450; Alexandria, VA 22313-1450.

May 18, 2005

Tamara L. Millikan

Amendments to the Specification:

Please amend the attorney docket number from 03959-P0023A to be 03959-P0024A.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A compressed air processing system, comprising:

an inlet connection; said inlet connection being designed and arranged to be connected to a conduit being connected to a compressor;

a pressure control unit;

a multi-circuit protection valve;

a plurality of outlet connections, each of said outlet connections being designed and arranged to be connected to a circuit;

a parking brake connection, said parking brake connection being designed and arranged to be connected to a conduit being connected to a parking brake cylinder;

an electronic control unit, said electronic control unit including an electric input connection for a control signal; ~~and~~

a valve arrangement,

said valve arrangement being designed and arranged to aerate and lock said parking brake connection in a controlled way due to a signal being generated by said electronic control unit, and

said valve arrangement being designed and arranged to deaerate said parking brake connection due to a signal being generated by said electronic control unit; and

a common housing on which said inlet connection, said plurality of outlet connections and said parking brake connection are arranged and within which said pressure control unit, said multi-circuit protection valve, said electronic control unit and said valve arrangement are disposed.

2. (original) The compressed air processing system of claim 1, wherein said valve arrangement includes a first switching valve and a second switching valve, said first switching valve and said second switching valves being designed and arranged to be separately controllable, said first switching valve having a passage position and a locking position and said second switching valve having a locking position and a deaerating position.

3. (currently amended) The compressed air processing system of claim 1, wherein said valve arrangement includes a 3/2 ~~ways~~ way valve, said 3/2 ~~ways~~ way valve having its own deaerating system.

4. (original) The compressed air processing system of claim 1, further comprising a pressure sensor, said pressure sensor being arranged between said valve arrangement and said parking brake connection, said pressure sensor being designed and arranged to produce a signal to be transmitted to said electronic control unit.

5. (original) The compressed air processing system of claim 1, further comprising a central aerating system for all circuits and a conduit leading to said parking brake connection, said valve arrangement being located in said conduit leading to said parking brake connection, said valve arrangement being connected to said central aerating system in a way to bypass overflow valves of other circuits.

6. (original) The compressed air processing system of claim 1, further comprising a central aerating system for all circuits and a conduit leading to said parking brake connection, said valve arrangement being arranged in said conduit, said conduit being connected to said central aerating system downstream of a pressure protection valve of a different circuit.

7. (original) The compressed air processing system of claim 1, wherein said valve arrangement includes at least one switching valve being designed and arranged to be pre-controlled by at least one solenoid valve.

8. (original) The compressed air processing system of claim 1, wherein said valve arrangement includes at least one directly controlled solenoid valve.

9. (original) The compressed air processing system of claim 1, wherein said valve arrangement includes two separately controllable switching valves, said switching valves being arranged in series with respect to a conduit leading to said parking brake connection.

10. (original) The compressed air processing system of claim 1, further comprising a mechanical spring, said mechanical spring being designed and arranged to determine a position in which said parking brake connection is deaerated.

11. (currently amended) A compressed air processing system, comprising:

a plurality of circuits;

a compressor;

a first conduit, said first conduit being connected to said compressor;

an inlet connection; said inlet connection being designed and arranged to be connected to said first conduit;

a pressure control unit;

a plurality of outlet connections, each of said outlet connections being designed and arranged to be connected to one of said circuits;

a parking brake cylinder;

a second conduit, said second conduit being designed and arranged to be connected to said parking brake cylinder;

a parking brake connection, said parking brake connection being designed and arranged to be connected to said second conduit;

an electronic control unit, said electronic control unit including an electric input connection for a control signal; ~~and~~

a valve arrangement,

said valve arrangement being designed and arranged to aerate and lock said parking brake connection in a controlled way due to a signal being generated by said electronic control unit, and

said valve arrangement being designed and arranged to deaerate said parking brake connection due to a signal being generated by said electronic control unit; and

a common housing on which said inlet connection, said plurality of outlet connections and said parking brake connection are arranged and within which said pressure control unit, said electronic control unit and said valve arrangement are disposed.

12. (original) The compressed air processing system of claim 11, wherein said valve arrangement includes a first switching valve and a second switching valve, said first switching valve and said second switching valves being designed and arranged to be separately controllable, said first switching valve having a passage position and a locking position and said second switching valve having a locking position and a deaerating position.

13. (currently amended) The compressed air processing system of claim 11, wherein said valve arrangement includes a 3/2 ~~ways~~ way valve, said 3/2 ~~ways~~ way valve having its own deaerating system.

14. (original) The compressed air processing system of claim 11, further comprising a pressure sensor, said pressure sensor being arranged between said valve arrangement and said parking brake connection, said pressure sensor being designed and arranged to produce a signal to be transmitted to said electronic control unit.

15. (original) The compressed air processing system of claim 11, further comprising a central aerating system for all circuits and a conduit leading to said parking brake connection, said valve arrangement being located in said conduit leading to said parking brake connection, said valve arrangement being connected to said central aerating system in a way to bypass overflow valves of other circuits.

16. (original) The compressed air processing system of claim 11, further comprising a central aerating system for all circuits and a conduit leading to said parking brake connection, said valve arrangement being arranged in said conduit, said conduit being connected to said central aerating system downstream of a pressure protection valve of a different circuit.

17. (original) The compressed air processing system of claim 11, wherein said valve arrangement includes at least one switching valve being designed and arranged to be pre-controlled by at least one solenoid valve.

18. (original) The compressed air processing system of claim 11, wherein said valve arrangement includes at least one directly controlled solenoid valve.

19. (original) The compressed air processing system of claim 11, wherein said valve arrangement includes two separately controllable switching valves, said switching valves being arranged in series with respect to a conduit leading to said parking brake connection.

20. (original) The compressed air processing system of claim 11, further comprising a mechanical spring, said mechanical spring being designed and arranged to determine a position in which said parking brake connection is deaerated.

Amendments to the Drawings:

No amendments are made to the Drawings herein.

REMARKS

By the foregoing Amendment, Claims 1, 3, 11 and 13 are amended. Entry of the Amendment, and favorable consideration thereof is earnestly requested.

The Examiner has noted that no certified copy of the German priority document had been received as of the mailing date of the Office Action (i.e., July 15, 2004). However, Applicant points out that such a certified copy was filed on November 9, 2004, subsequent to the mailing date of the Office Action.

The Examiner has objected to Claims 3 and 13 as containing an informality. Claims 3 and 13 have been amended.

Claims 1-20 stand rejected under 35 U.S.C. 102(b) as being anticipated by Blanz (DE 19638226C1) or under 35 U.S.C. 102(e) as being anticipated by Hilberer (US6540308B1). Applicant respectfully requests that the Examiner reconsider these rejections in view of the following Remarks.

The present invention is directed to a compressed air processing system which includes an inlet connection, a pressure control unit, a multi-circuit protection valve, a plurality of outlet connections, a parking brake connection, an electronic control unit and a valve arrangement. The inlet connection is connected to a conduit coming from a compressor. Each of the outlet connections is connected to a circuit (I, II, and so forth). The parking brake connection is connected to a conduit coming from a parking brake cylinder. The electronic control unit includes an electric input connection for a control signal. The valve arrangement aerates and locks the parking brake connection in a controlled way due to a signal being generated by the electronic control unit. The valve arrangement also deaerates the parking brake connection due to a signal being

generated by the electronic control unit. The various components of the system are disposed within a common housing, such that a single unit is formed.

Claims 1 and 11 have been amended to highlight the above-highlighted novel feature of the present invention. More specifically, Claim 1 has been amended to require "a common housing on which said inlet connection, said plurality of outlet connections and said parking brake connection are arranged and within which said pressure control unit, said multi-circuit protection valve, said electronic control unit and said valve arrangement are disposed." Similarly, Claim 11 has been amended to require "a common housing on which said inlet connection, said plurality of outlet connections and said parking brake connection are arranged and within which said pressure control unit, said electronic control unit and said valve arrangement are disposed." Applicant respectfully submits that neither of the cited prior art references discloses, teaches or suggests at least this novel aspect of the invention.

More specifically, all claims of the present invention, as amended, require a valve arrangement included in a common housing, the valve arrangement being designed and arranged to aerate and exhaust, respectively, the parking brake connection to a parking brake cylinder. The signal to control the valve arrangement is processed by an electronic control unit which is also included in the common housing of the compressed air processing system.

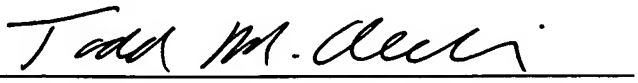
DE 196 38 226 is equivalent to EP 0 831 383, and enclosed herewith is a complete translation of EP 0 831 383 as requested by the Examiner. Even without reading this translation however, it can be seen from Figure 1 of this application that the hand brake valve 31, which controls the parking brake, is arranged outside the common housing 1 of the compressed air processing unit, meaning that housing 1 is only connected by a line to hand brake valve 31 as already known in

the prior art. The same thing can be seen from the embodiment of Figure 2. Here also, the hand brake valve 31 is not included in the common housing 1 but connected by a line to reservoir 27" via a separation valve 41. Consequently, Blanz does not disclose, teach or suggest in any way that the various components of the system are disposed within a common housing, as is required by all claims as amended.

Exactly the same differences are provided between the present invention as claimed and Hilberer. Figure 1 and Figure 2 do not show any connection to a parking brake. Only the embodiment of Figure 3 shows a connecting line to a parking brake (FBA). In the housing of the processing unit there is only included a check valve 11, which obviously is not able to control the parking brake. Consequently, Hilberer does not disclose, teach or suggest to incorporate the various components of a compressed air processing unit (including control valve arrangements) inside a common housing.

For the foregoing reasons, Applicant respectfully submits that all pending claims, namely Claims 1-20, are patentable over the references of record, and earnestly solicits allowance of the same.

Respectfully submitted,



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Application No.: 97 114 894.5 (EP 0 831 383)
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The invention refers to the use of a signal being generated by a control unit of a controller and shows a controller also and an installation of compressed air production for such a vehicle.

A controller of the type described above is known from DE 44 21 575 A1. A multi-circuit control valve with its overflow valves and an air-drier are provided in the housing of this electronic unloader. The housing of the unloader has a chamber to receive the compressed air of a source of compressed air. The chamber is connectable with the atmosphere via a controlled outlet valve during its open position. Each overflow valve comprises a control and monitoring unit branching off downstream the check valve of the unloader. Each control and monitoring unit has a check valve also closing in opposite direction of the flow, an operation unit for controllable opening of a passing through valve and a pressure sensor to detect the pressure downstream the controlled check valve. Thus, a number of operation modes are possible.

A further unloader is known from DE 35 06 178 A1. The unloader comprises a housing having an inlet and an outlet connected with the atmosphere. A line starting from a chamber is connected finally with a reservoir in known manner. A check valve is arranged between the chamber and a flow through connection. The check valve opens in the direction to the flow through connection and prevents a backflow. Upstream the check valve an outlet valve is provided, the outlet valve having a unit to alternatively open and to close, the unit including a solenoid valve in form of a 3/2 directional solenoid valve. A pressure sensor is provided being a pressure voltage transformer detecting the pressure downstream the check valve, i.e. in the flow through connection. The outlet valve is designed as a quick release

valve having a clamped membrane. The solenoid valve is controlled by an electrical control unit to switch between the pumping state and the running idle of the compressor. Thus, an electronic unloader is provided having all the functions of mechanically designed unloaders.

The object of the invention is to provide a controller and/or an installation of compressed air production making it possible to prevent the release of the emergency and parking braking circuit of a vehicle during a pressure in the reservoirs assigned to the service braking circuits not sufficient to actuate a minimum of deceleration of the vehicle. In other words, the reservoirs of the service braking circuits should be filled first with compressed air of a pressure guaranteeing a minimum of deceleration of the vehicle during braking action prior to release the emergency and parking brake and to start driving the vehicle.

In accordance with the invention that is achieved by the use of a signal to shut off a supply line to a hand brake valve, the signal being generated by a control unit with respect to pressures in the reservoirs assigned to the service braking circuits, the pressures being too low to guarantee a minimum of deceleration of the vehicle. The invention is directed to a controller for installation of compressed air production of claim 2 and to an installation for compressed air production of claim 6.

The invention starts from the idea to generate a signal by the aim of the control unit, the signal being present during a pressure of compressed air in the reservoirs assigned to the service braking circuits which is lower than a fixed or choosable value or the pressure of the compressed air. When this signal is present, the supply line to the hand brake valve is shut off, making the release of the emergency and parking brake impossible, so that the vehicle cannot be moved, i.e. the

driving cannot be started. All this happens during the pumping stage of the unloader. The circuit may be designed to generate the signal only when the unloader is in the pumping stage. Thus, it is guaranteed that the filling action of the reservoirs of the single circuits is continued without having the possibility to move the vehicle. Consequently, the pressure in the reservoirs will increase. Since the pressure in each of the reservoirs will be watched already, it is easily possible to detect when the pressure overrides the fixed or adjusted pressure value. At this moment the supply line is free to let the air through so that any actuation of the hand brake valve then will cause and operation of the hand brake valve and a release of the emergency and parking brake.

This invention can be used for example with respect to a controller as a singular unit. On the other hand the invention can be used with respect to an installation of compressed air production, i.e. an installation having a number of singular elements being connected with corresponding electrical and pneumatic lines.

Such a controller for installation of compressed air production for vehicles comprises a housing having an inlet, a chamber, an outlet, an unloader for the compressed air, the unloader being connectable with the atmosphere by a controlled outlet valve when in its opening position, a check valve downstream the unloader, an integrated multi-circuit control valve having a number of control and monitoring units branching off downstream the check valve of the unloader, a common control unit to actuate the controlled outlet valve of the unloader and the control and monitoring units, and a regenerable air-drier between the unloader and the downstream positioned check valve, the air-drier being controlled by the common control unit and a regeneration solenoid valve with a downstream positioned check valve for purpose of controlling the air-drier. This controller

is characterized by the control and monitoring unit being assigned to the hand brake valve. The controller additionally has a closing position to shut off a supply line to the hand brake valve. It has a pneumatically controllable piston to reach the closing position. The regeneration solenoid valve is connected with the control and monitoring unit assigned to the hand brake valve via a control line. The control unit is designed to generate a signal with respect to pressures in the reservoirs assigned to the service braking circuits, the pressures being too low to guarantee a minimum of deceleration of the vehicle. The regeneration solenoid valve is controllable by the signal during the pumping condition of the unloader. Thus, the invention is used as a singular unit, i.e. the controller. The control and monitoring unit of the circuit assigned to the emergency and parking braking system is designed slightly different compared with the other units so that additionally a shut off position of the supply line is possible. This shut off position is active, if the pressure in the reservoirs assigned to the service braking circuits, as described above, is too low to guarantee a minimum of a deceleration of the vehicle during braking operation. It would be too dangerous in this stage to start a driving action with the vehicle. The possibility of driving is hindered because the emergency and parking brake cannot be released at this stage by the hand brake valve.

The control line may be connected with the line connecting the regeneration solenoid valve and the air-drier upstream a check valve having a throttle positioned downstream. Thus, the regeneration solenoid valve is excited by the signal causing two functions. If the unloader is running idle during normal filling stage of the reservoirs, the regeneration solenoid valve causes the regeneration of the air-drier, i.e. compressed air out of the reservoirs will flow backwardly through the air-drier to the atmosphere taking with it the humidity in the air-drier. On the

other hand, the signal generated by the control unit will be transmitted to the regeneration solenoid valve, if the unloader is in the pumping condition and the chosen pressure value is not reaches jet in the reservoirs. In this case a regeneration cannot be caused because the unloader is in the pumping stage. But it is possible also to use the regeneration solenoid valve only to fulfil a second function, namely for the closing position in the supply line to the hand brake valve.

Doing this, it is possible to branch off a further line from the control and monitoring unit assigned to the hand brake valve, giving connection with a reservoir assigned to a further circuit. The control and monitoring unit comprises two outlet connections and one inlet connection. The control unit can be operated electrically or pneumatically. A 3/2 directional solenoid valve can be provided as the regeneration solenoid valve, the 3/2 directional solenoid valve having a check valve positioned downstream for regeneration purpose. Such a valve can be used to fulfil both of the described functions.

On the other hand, the invention can be used with respect to an installation of compressed air production of a vehicle having the features describes in the first part of claim 6. The installation is characterized in that a separation valve, especially a solenoid valve, is provided in a supply line. The supply line connects the control and monitoring unit assigned to the hand brake valve with the hand brake valve. The control unit of the controller is designed to generate a signal with respect to pressures in the reservoirs assigned to the service braking circuits, the pressures being too low to guarantee a minimum of deceleration of the vehicle. The regeneration solenoid valve is controllable by the signal during the pumping condition of the unloader.

There is the possibility that a reservoir is provided in the supply line to the hand brake valve. The separation valve is arranged in the supply line between the reservoir and the hand brake valve. In this connection it is important to prevent the flow of compressed air out of the reservoir to the hand brake valve.

The invention is further explained and described with reference to the drawings showing preferred embodiments. It is shown in :

Fig. 1 a diagram of a controller as a singular unit being part of a system according to the invention,

Fig. 2 a diagram of a system for compressed air production showing the essential parts of the invention.

The embodiment shown in Fig. 1 illustrates the elements of an unloader 2, a multi-circuit protection valve 3, and an air-drier 4 being integrated in a common housing 1. The housing 1 and the unloader 2 respectively comprises an inlet 5. A line 6 starting from a compressor 7 is connected with the inlet 5. The inlet 5 is connected to a chamber to which a controlled outlet valve 8 is connected leading to an outlet 9 connected with the atmosphere. The controlled outlet valve 8 has a valve body cooperating with an rim of the housing 1 and being supported on a spring 10. A piston having a tappet is assigned to the valve body. A pressure chamber is provided for the piston, the pressure chamber being connected with a line 11, in which a 3/2-directional solenoid valve 12 is provided.

A line 13 connects the unloader 2 with the air-drier 4. Line 13 extends further to a check valve 14 and further into a chamber (not shown) from which the branching off of the compressed air

to the several elements starts. A line 15 is in connection with a regeneration solenoid valve 16 which is also supplied with compressed air from the same chamber.

The regeneration solenoid valve 16 has the two positions illustrated and is controlled via the electric cable 17 by an electric control unit 18. The regeneration solenoid valve 16 has a venting 19. A line 20 is provided connecting the solenoid valve 16 with a check valve 21 and a throttle 22 to the air-drier 4. This line 20 serves for regeneration of the air-drier 4. The line 20 terminates at the line 13 between the check valve 14 and the air-drier 4.

The multi-circuit control valve 3 comprises a number of pressure safety valves 23, 23', 23", 23''' and pressure sensors 24, 24', 24" and 24'''. A further pressure sensor 25 serves to detect the pressure in a common chamber immediately downstream the check valve 14, the common chamber having connection to all elements. It is evident that the pressure sensors 24 and 25 are connected with the electric control unit 18. Each control and monitoring unit 30 comprises a pressure safety valve 23 and a pressure sensor 24. Thus, a first control and monitoring unit 30 is provided and assigned to the first service braking circuit. Consequently, a downstream line 26 gives connection to a reservoir 27. The pressure sensor 24 is located in this line 26. A branching line 28 connects the line 26 via a safety valve 29 with the atmosphere. Analogously, a control and monitoring unit 30' is provided, being assigned to the second service braking circuit. The individual parts of the control and monitoring unit 30' are designed in the same manner as described with reference to the control and monitoring unit 30.

The control and monitoring unit 30" is designed slightly different. The unit is assigned to the hand brake valve 31 and thus to an emergency braking circuit. For this purpose, a line

32 having a check valve 33 gives connection to the hand brake valve 31 and to the emergency spring cylinder of the emergency and parking braking circuit. The pressure safety valve 23" of the control and monitoring unit 30" has the three indicated positions and is electrically controlled. It further has a pneumatic control connection 35 for a cooperating piston. The control connection 35 is connected with the line 20 downstream the regeneration solenoid valve 16 via a control line 36. Thus, it is possible, to control the control and monitoring unit 30" by the regeneration solenoid valve 16 and to shut off the supply line 32 so that an actuation of the hand brake valve 31 cannot cause a release of the emergency and parking braking circuit.

On the other hand, the control and monitoring unit 30" is assigned to a further circuit. Thus, a line 26" gives connection to the reservoir 27".

The control and monitoring unit 30''' is assigned to a fourth circuit and analogously assigned and connected. The supply of compressed air by the compressor 7 during pumping condition of the unloader 2 is effected to the control and monitoring units 30, 30', 30" and 30''' over the check valve 14 and a line 37. A line 38 branches off from this chamber supplying the pressure safety valves 23, 23', 23" and 23''' with compressed air from the compressor 7. The line 38 further gives connection to an overflow valve 39 and a reservoir 40 positioned downstream.

The controller of Fig. 1 with its housing 1 allows the following operation with respect to the connected parts :

If the vehicle is in the parking position and the emergency and parking braking circuit is effective, the emergency spring cylinders are vented via the hand brake valve 31. In the reservoirs 27, 27', 27" and 27''' is a low pressure detected by the pressure sensors 24, 24', 24" and 24'''. Corresponding

signals are transferred to the electronic control unit 18 when the engine of the vehicle is started. Consequently, the electronic control unit 18 of the unloader 2 shifts the compressor into the pumping condition, in which the reservoirs 27, 27', 27" and 27''' are subsequently filled with compressed air under raising pressures. If the pressures in the reservoirs 27 and 27' detected by the pressure sensors 24 and 24' are to low to guarantee a minimum of deceleration of the vehicle during a braking action, the electric control unit 18 shifts the regeneration solenoid valve 16 by a signal in line 17 into the other position, so that compressed air can flow via the control line 36 to the control connection 35 of the control and monitoring unit 30" and thus a position is reached, in which the supply line 32 is shut off. It is possible to actuate the hand brake valve 31. However, since compressed air to release the emergency spring cylinders 34 cannot be supplied, the emergency and parking braking circuit is effective and the vehicle remains in parking condition. Thus, it is prevented to move the vehicle in this moment and to start driving. The controlling of the regeneration solenoid valve 16 at this stage cannot cause a regeneration cycle in the air-drier 4, because the unloader 2 is in pumping condition. A regeneration can only be effected during the running idle of the compressor. Thus, the pumping condition will be continued till a minimum of pressure is in the reservoirs 27 and 27' guaranteeing a minimum of deceleration of the vehicle under braking action. In this moment, the electric control unit 18 shifts the regeneration solenoid valve 16 into the other position, so that compressed air can flow to the hand brake valve 31 via the supply line 32. An actuation of the hand brake valve 31 results in a release of the emergency and parking braking circuit. The vehicle can be moved. The pressure in the reservoirs 27, 27', 27" and 27''' will increase further till the maximum of pressure is reached. Then, the unloader 2 shifts the compressor to run idle.

The system for compressed air production illustrated in Fig. 2 has a control unit with a housing 1 also. This control unit is designed similar to the control unit illustrated in Fig. 1. However, the control and monitoring unit 30" is analogously designed with the other control and monitoring units 30, 30' and 30'''. Control line 36 is not needed and the pressure safety valve 23" has no pneumatic control connection 35. The supply line 32 gives connection to the reservoir 27" and to the hand brake valve 31 via a separation valve 41. An electric line 42 connects the electric control unit 18 and the separation valve 42. The shut off position of the supply line 32 is not caused by the regeneration valve 16, but by a signal transmitted to the separation valve 41 via a line 42. The function is analogous.

LIST OF REFERENCE NUMERALS

1 - housing
2 - unloader
3 - multi-circuit control valve
4 - air-drier
5 - inlet
6 - line
7 - compressor
8 - outlet valve
9 - outlet
10 - spring
11 - line
12 - solenoid valve
13 - line
14 - check valve
15 - line
16 - regeneration solenoid valve
17 - cable
18 - control unit
19 - venting
20 - line
21 - check valve
22 - throttle
23 - pressure safety valve
24 - pressure sensor
25 - pressure sensor
26 - line
27 - reservoir
28 - branching line
29 - safety valve
30 - control and monitoring unit
31 - hand brake valve
32 - supply line
33 - check valve
34 - emergency spring cylinder
35 - control connection
36 - control line
37 - line
38 - line
39 - overflow valve
40 - reservoir
41 - separation valve
42 - line

C L A I M S :

1. Use of a signal to shut off a supply line (32) to a hand brake valve (31), the signal being generated by a control unit (18) with respect to pressures in the reservoirs (27, 27') assigned to the service braking circuits, the pressures being too low to guarantee a minimum of deceleration of the vehicle.

2. Controller for installation of compressed air production for vehicles comprising a housing (1) having an inlet (5), a chamber, an outlet (9), an unloader (2) for the compressed air, the unloader being connectable with the atmosphere by a controlled outlet valve (8) when in its opening position, a check valve (14) downstream the unloader (2), an integrated multi-circuit control valve (3) having a number of control and monitoring units (30, 30', 30" etc.) branching off downstream the check valve (14) of the unloader (2), a common control unit (18) to actuate the controlled outlet valve (8) of the unloader (2) and the control and monitoring units (30, 30' etc.), and a regenerable air-drier (4) between the unloader (2) and the downstream positioned check valve (14), the air-drier (4) being controlled by the common control unit (18) and a regeneration solenoid valve (16) with a downstream positioned check valve (21) for purpose of controlling the air-drier (4), **wherein** the control and monitoring unit (30'') being assigned to the hand brake valve (31) in addition has a closing position to shut off a supply line (32) to the hand brake valve (31) and has a pneumatically controllable piston to reach the closing position, the regeneration solenoid valve (16) is connected with the control and monitoring unit (30'') assigned to the hand brake valve via a control line (36), and the control unit (18) is designed to generate a signal with respect to pressures in the reservoirs (27, 27') assigned to the service braking circuits, the pressures being too low to guarantee a minimum of deceleration of the vehicle, the regeneration solenoid valve (16)

being controllable by the signal during the pumping condition of the unloader (2).

3. The controller of claim 2, **wherein** the control line (36) is connected with the line connecting the regeneration solenoid valve (16) and the air-drier (4) upstream a check valve (21) having a throttle (22) positioned downstream.

4. The controller of claims 2 or 3, **wherein** a further line (26'') branches off from the control and monitoring unit (30'') being assigned to the hand brake valve (31), the line being connected with a reservoir (27'') assigned to a further circuit.

5. The controller of claim 2, **wherein** a 3/2 directional solenoid valve is provided as the regeneration solenoid valve (16), the 3/2 directional solenoid valve having a check valve (21) positioned downstream for regeneration purpose.

6. Installation for compressed air production for a vehicle comprising a housing (1) having an inlet (5), a chamber, an outlet (9), an unloader (2) for the compressed air, the unloader being connectable with the atmosphere by a controlled outlet valve (8) when in its opening position, a check valve (14) downstream the unloader (2), an integrated multi-circuit control valve (3) having a number of control and monitoring units (30, 30', 30" etc.) branching off downstream the check valve (14) of the unloader (2), a common control unit (18) to actuate the controlled outlet valve (8) of the unloader (2) and the control and monitoring units (30, 30' etc.), and a regenerable air-drier (4) between the unloader (2) and the downstream positioned check valve (14), the air-drier (4) being controlled by the common control unit (18) and a regeneration solenoid valve (16) with a downstream positioned check valve (21) for purpose of controlling the air-drier (4), **wherein** a separation valve (41), especially a solenoid valve, is provided in a supply line (32),

the supply line connecting the control and monitoring unit (30") assigned to the hand brake valve (31) with the hand brake valve (31), and the control unit (18) of the controller is designed to generate a signal with respect to pressures in the reservoirs (27, 27') assigned to the service braking circuits, the pressures being too low to guarantee a minimum of deceleration of the vehicle, the regeneration solenoid valve (16) being controllable by the signal during the pumping condition of the unloader (2).

7. The installation of claim 6, **wherein** a reservoir (27") is provided in the supply line (32) to the hand brake valve (31) and the separation valve (41) is arranged in the supply line (32) between the reservoir (27") and the hand brake valve (31).